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ABSTRACT

A study examined on-the-job training (OJT) at 8 Dutch firms employing more than 500 individuals each. A case study approach was used to investigate the following: job characteristics, program history, training schedules, training process, training materials, interaction with production, trainee characteristics, trainer characteristics, social support, and effectiveness of the QJT program. It was concluded that the need for structuring OJT is greatest when large numbers of employees must be trained for similar jobs, initial training levels are low, the difference between initial competence levels and competence levels required for adequate job performance is great, and the damage likely to be caused by poor job performance is great. The techniques/measures used to structure OJT at the firms were identified and categorized as follows: tailoring measures designed to solve the dilemma of standardization of work processes versus adaptation to new/local circumstances; timing measures designed to combine the advantages of systematic transfer of skills/knowledge with the motivating/illuminating power of immediate experience; measures to safeguard training from the exigencies of production; support measures intended to relate individual learning processes to general training goals; and guidance measures to create learning situations in which trainees can experiment without risking disastrous failure. (Contains 18 references.) (MN)

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STRUCTURING ON-THE-JOB TRAINING

J.A. DeJong, A.M. Versloot

Introduction

Structured on-the-job training is a form of job-oriented training which is located in the workplace. The trainee performs practical assignments according to a training plan and is coached by an experienced colleague or supervisor. Mastery of the job tasks is formally assessed. This form of training is increasingly gaining the attention of the business world as well as researchers. At Utrecht University, the Netherlands, a research project was started in 1990 with the aim of developing a research-based domain-specific theory of on-the-job training. Data were gathered from eight Dutch firms, following a review of the literature, two exploratory case studies and a telephone survey of on-the-job training programs in Dutch industry and commerce. This research report deals with those eight case-studies and is limited to micro-level data and didactic matters. Meso-level data, concerning program development and organizational incorporation, will be separately reported.

Theoretical background

The term 'on-the-job training' is used in very different connotations, ranging from 'corporate training in general' (including corporate classrooms) to 'loosely coached learning-by-doing in the actual work setting' (excluding more structured forms of training, even if these occur in the actual work setting; see Bird McCord 1987). In this paper the term on-the-job training is used as an equivalent of on-site training (a term introduced by Wexley & Latham 1981) and denotes both more and less structured training in the actual work setting.

As a result of publications of Jacobs & McGiffin (1987), Rothwell & Kazanas (1990b), and others it has become commonplace to distinguish between unstructured and structured on-the-job training. Jacobs (1992) describes structured on-the-job training as a form of training that 'occurs in the actual workplace, makes use of training objectives and plans, requires the active involvement of a trainer, uses printed materials and job guides, and employs a systems approach'. One may wonder whether this is a definition or an ideal: what about on-the job training that takes place without an active trainer or that is developed without use of a systems approach? It has been argued (DeJong, 1991) that structuring by means of training objectives and plans is just one way of structuring (another way being: structuring according to ongoing work processes). Moreover, several on-the-job training programs have been identified that rely primarily on active study by the trainee ('on-site study') instead of active instruction by a trainer ('on-site instruction'). On-the job training has multiple forms. It could be argued that structured on-the-job training as defined by Jacobs is suitable for lower educated frontline employees but less suitable for artisans, professionals and managers.

There are some indications of the extend to which structured on-the-job training is practiced in business and industry. Rothwell and Kazanas (1990b) asked 127 ASTD members whether their company had any kind of instructor training. In the authors' perception the presence of such a training indicates the occurrence of structured on-the-job training. About two out of five respondents knew of a training for trainers in their company. DeJong (1992) asked 151 HRD-managers of large Dutch companies (of over 750 employees) whether their company offered structured on-the-job training (defined as training taking place in the actual work environment with the use of training objectives and plans, assignments to be made in the work site, and some sort of formal assessment). Almost half the companies offered structured on-the-job training, albeit it to a relatively small proportion of the total staff in most cases. Both Rothwell & Kazanas and DeJong found the largest numbers of companies with on-the-job training among industrial production firms and bank or insurance firms, but this can easily be explained by the fact that these belong to the largest categories of big companies.

Some research has been carried out into the effectiveness of structured on-the-job training (Belbin, Belbin & Hill 1957, Cullen et al. 1976, Jacobs & McGiffin 1987, Jacobs, Jones & Neil 1992). This shows that structured on-the-job training takes substantially less training time than unstructured on-the-job training. The presupposition underlying this research is that unstructured on-the-job training is the bottom-line, and that time saving is the main criterion for effectiveness.

Research into on-the-job training processes (albeit not on-the-job training of the structured type) is reported by Scribner & Sachs (1990). Scribner and Sachs studied the way work and education, i.e. two separate activity systems, interacted in ongoing on-the-job training, as well as the way trainers move between responsibility for their work and their training, their choice of initial tasks for the trainee, the way they reorganize the work which is to be done in the trainee's presence, and the way they combine instruction with work activities.

Research into conditions for effective on-the-job training is rare, although several 'how to do' publications are available (Connor 1983, Sullivan & Miklas 1985, Broadwell 1986, Bird McCord 1987, Rothwell & Kazanas 1990a, Clark 1991, Wexley & Latham 1991).

The case studies reported here were planned to increase insight into conditions, processes and effects of structured on-the job training programs. The researchers wanted to know how and why these programs were initiated, how they were embedded in the organization, how they were adapted to the needs of trainees and trainers, how the programs were designed, and what their effects were.

Exploratory case studies

The case studies were made in two rounds. In the first round a structured on-the-job training program for maintenance personnel at the Nederlandse Spoorwegen (the Dutch national railways) and two structured on-the-job training programs for tinners

and stackers at Hoogovens IJmuiden (a large blast-furnace plant) was the object of study (DeJong, 1993). This led to the following modifications of the researcher's conception of on-the-job training.

- Structured on-the-job training could not only replace unstructured on-the-job training (as was the case at Hoogovens IJmuiden), but it could be developed as an alternative for corporate classroom training as well (as was the case at the Dutch railway company).
- Time saving was an important reason for transforming off-the-job training into (mainly) on-the-job training: training could be provided in a much more flexible schedule due to individualization. Trainees did not have to wait until a course was provided. Trainers could schedule training sessions taking account of workload demands.
- In neither of the cases was job training purely located on the work-site. On-the-job training was supplemented with off-the-job courses, which dealt with the theoretical background or with skills involving risks.
- The timing of training was crucial to its effects, especially the timing of the off-the-job training component in relation to the on-the-job training process.
- 'Trainers' were assigned various roles. Some had an (active) instructor's role, others a (more reactive) mentor's role.
- Training materials (including manuals, work process descriptions, assignments) could substantially relieve the trainer's task.
- The development of training materials itself could lead to improvements in working procedures.

The second round of case studies will be discussed in greater detail below.

Research design

Given the fact that so few theoretical and empirical studies are available on the topic of structured on-the-job training, the research was bound to have an exploratory character. The main research objective was to increase insight into (forms of) structured on-the-job training as realized in practice. This general objective was specified in 17 research questions, nine of which can be related to the micro level. Those nine research questions are presented below[1]:

Persons involved:

1. Does the level of the trainee' previous education influence the process and the results of training-on-the-job?
2. Do trainee learning habits influence the process and the results of training-on-the-job?

[1] The part of the research concerned with the incorporation of structured on-the-job training in the organization will be discussed in Versloot, A.M & DeJong, J.A. (1994). *Organizational context of structured on-the-job traininig.* Paper to be presented at the IRNETD Conference. Milan (It.), June 23-25 1994.

3. Do characteristics of the trainer influence the process and the results of training-on-the-job?
4. Do supervisors/managers influence the process and the results of training-on-the-job?
5. Do colleagues influence the process and the results of training-on-the-job?

Didactics:

6. Are certain types of (structured) on-the-job training suitable for certain types of jobs?
7. What types of assignments were evaluated as being the most useful?
8. What characteristics of training materials were evaluated most positively?
9. What timing of on-the-job and related off-the-job training was evaluated as the most effective?

With regard to each of these research questions expectations were formulated, based on information from the literature and from the two exploratory case-studies. The expectations are listed below (numbers correspond to the numbers of the research questions).

1. Higher educated trainees will be most successful if the on-the-job training involves independent study.
2. Trainees who show initiative and openness to criticism will learn faster and better than trainees who wait and see and/or react in a defensive way to criticism.
3. a. Effectiveness of on-the-job training depends on recruiting trainers who are professionally skilled, socially capable, and motivated.
   b. The presence of capable trainers will depend on the HRM-policy with regard to this category of personnel.
4. a. The more local supervisors show a serious attitude towards structured on-the-job training, the more this training will be realized as intended.
   b. A serious attitude of local supervisors towards structured on-the-job training will be promoted by providing them with information, training and guidance, and by having them participate in needs-assessments, task-analyses, evaluations, and updating.
5. Positive attitudes of fellow-employees towards adult education will contribute to the success of structured on-the-job training.
6. 'On-site study' will be most effective for jobs with a substantial problem-solving activity component, whereas 'on-site instruction' will be most effective for jobs that mainly involve the following of rules.
7. Assignments will be evaluated positively if: a. the prerequisite knowledge is present; b. trainees receive, within safety limits, room to experiment; c. well-timed and clear feedback is provided; d. good results qualify for the performance of new tasks; and d. the assignment is clearly related to future tasks.
8. a. Manuals will be judged to be more effective if they are regularly updated; treat most occurring tasks and problems first; treat both the 'how' and the 'why'; are clearly structured.
   b. Practice with (copies of) materials available on the work-site will be experienced as meaningful.
9. a. Just-in-time training will be most effective. Just-in-time on-the-job training depends on the reduction of work pressure and well-timed teaching of theoretical prerequisite knowledge.
   b. To be judged effective structured on-the-job training should interfere with production as little as possible. This can be achieved by using 'lee hours' for training; the gradual introduction of trainees into productive tasks of increasing complexity; delivering instruction by written or electronic media; reducing learning time by good instructional materials without.
   c. Structured on-the-job training should not be hindered by production pressure. This can be achieved by allowing trainers time for training; regular assessment of trainee progress; common duty-rotas of trainer and trainee; appointing trainers who are sensitive for the training needs of trainees.

The concepts used in these expectations were translated into questionnaire-items. Five questionnaires were developed, for trainees (and former trainees), trainers, supervisors, managers and HRD-officers. A separate instrument was constructed for

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the analysis of relevant documents. Each item was placed in the questionnaires for those category of participants considered knowledgeable. As a consequence, many items were placed (if necessary in modified form) in more than one questionnaire. Interviews were held by students who were in their last year of the Utrecht University Educational Studies program. Numbers of interviewed persons per case varied from 7 to 19, with an average of 12. Some persons (those who were in a coordinating position) were interviewed more than once. By placing the same item in several questionnaires some 'triangulation' could take place; i.e. checking reports from different witnesses. Interviews were tape-recorded, typed out, and checked by the interviewees. Segments of the scripts were coded in relation to the concepts measured. Data from all the interviews for each case were summarized for each concept. Case-reports were written based on these summaries. The case-reports relate the collected data to the expectancies and the research questions formulated in advance.

The cases

In the second round a selection was made of 8 companies (of over 500 employees), offering training programs designated as 'a type of structured on-the-job training'.
In some cases one can conclude in retrospect that the training program studied did not satisfy Jacobs' definition of structured on-the-job training. In general, the training programs studied differ in amount of structure, as well in many other aspects. A common feature, distinguishing these programs from on-the-job training programs studied in the past, is that they neither are located in factories, nor prepare for technical production jobs. Table 1 provides an overview.

In each case just one training program was the subject of study, with the exception of Peek & Cloppenburg, where three programs, for different functions, were studied. At KNMI two similar programs for comparable functions were studied.

Program descriptions

The descriptions of the investigated on-the-job training programs follow a fixed format: a) job characteristics, b) program history, c) training schedules, d) training process, e) training materials, f) interaction with production, g) trainee characteristics, h) trainer characteristics, i) social support, j) effectiveness of the program.

Table 1: Companies and functions

Company	Product/service	Function	Tasks of employee
1. ABN-AMRO	Banking.	Front-office workers, using a new computer system.	Advising clients/ administration of financial transactions with clients.
2. AERO Groundservices	Dispatch of airplanes, passengers, and cargo at Schiphol Airport.	Ground attendants.	Check-in of passengers/ controlling luggage /ticket control/ operating bridges.
3. AMEV	Insurance.	Client administrators in the Collecting Division.	Dispatch of correspondence/ administration.
4. KNMI	Weather bureau/ meteorological office: Information on the weather.	Observers.	Observing the weather/ report. Located in Schiphol airport and Vlissingen weather station.
5. NS	National railway company: transport of people and cargo.	Front-office workers.	Selling tickets/ advising clients.
6. Peek & Cloppenburg	Clothing retail.	1. Salesmen, 2. Senior salesmen, 3. Department supervisors.	1. Selling clothes/ presentation/ service; 2. Ditto + supplementing/ maintenance; 3. Supply management + people management.
7. RABO	Banking.	Client advisors (front-office).	Advising clients/ selling savings- and insurance-products/ managing client- and product-information.
8. Victoria Vesta	Insurance.	Insurance-agents.	Advising clients/ selling insurance policies/ expanding clientele/ dealing with claims by clients.

ABN-AMRO

a) Job characteristics: The focus of the investigation is on the training of tellers and retail advisors of a large Dutch bank, working in local branches.

b) Program history: The ABN-AMRO is a bank with 25,000 employees. The company is the result of a fusion of two Dutch banking firms in 1991. Concurrent with the fusion a new front-office electronic data-processing system was installed. Although front-office data processing was normal practice in one of the participating banks, the new system was based upon the administrative procedures in use at the other bank. As a consequence the employees of both banks had to be trained in using the new system. This training is reported in the present case-study. The training was offered to all employees working with the newly introduced system. About 18,000 staff had to be trained within a period of two years.

c) Training schedules: Five weeks before the new system was operational in a particular bank office, the team received instruction in a regional training center. Each day during a week's period one fifth of the team was instructed in the training center, together with personnel from other offices in the region. In the four remaining weeks the team members could practice working with the system in their own offices. The average number of hours of on-line practice observed per employee is 20. Another 9 hours on average was spent on paper-and-pencil exercises relating to other programs.

d) Training process: For purposes of practising, an 'isolated branch' of the system was used; a non-operational part of the system in which all procedures could be practised without disturbances in main data processing. This 'training environment' could be used on every terminal in the office. Usually employees practised in a separate room, in order not to be disturbed. In some offices the team practiced in the evening, when the office was closed to the public.

e) Training materials: For each application of the computer system a book with exercises was provided. The exercises describe realistic client interactions which need computer data processing.

f) Interaction with production: Employees were asked to read the information in the workbooks before entering the 'training environment'. Each employee had to find out what applications were relevant to their particular job and therefore needed practising. Learning time was to be spread over the available period, but those who needed to know just a few applications were advised not to start too early. In order to relieve production pressure a regional support team was formed, replacing employees who were off for training.
g) Trainee characteristics: Older employees usually have a medium level economic/administrative education. Younger employees often have rather high general education.
h) Trainer characteristics: With the exception of the central instruction, training is meant to be individualized and trainer-free. However, in some offices a number of employees developed expertise in certain applications, and supported others in mastering them.
i) Social support: Training was considered necessary and office managers took it seriously. They realized the importance of well-trained employees and were prepared for their role in the transition in their own management training.
j) Effectiveness of the program: There has been no opportunity to compare the effects of the training with the effects of an alternative treatment, so statements on effectiveness have been hard to come by. The general impression is that the combination of one central instruction period of one day, combined with an on-line training environment in the own office is a good solution. However, one alternative has been developed spontaneously in some offices where the training environment could not be installed in time: the employees visited an office that was used to the new system and were coached in the use of the system by their more experienced colleagues. This alternative was evaluated very positively.

AERO Ground Services

a) Job characteristics: This case study focuses on the training of newly hired ground attendants of the Passenger Department of AERO Ground Services at Schiphol Airport, whose task it is to check in passengers, check passengers' bagage and operate the avio-bridges. There are about 220 ground attendants. AERO Ground Services employ a total of 1,200 staff.
b) Program history: Before 1989 new ground attendants received an unstructured form of on-the-job training. The T&D officer, together with the manager of the Passenger Department and the Personnel officer, took the initiative. The newly developed training course, based on a task analysis, was off-the-job and quite extensive. Evaluation led to a new design for the training course in 1991: a shorter off-the-job training, followed by more structured on-the-job training. Also, a field orientation day has been scheduled for the second day of the off-the-job training, which makes the off-the-job course less 'theoretical'.
c) Training schedule: The first four weeks are used for the off-the-job training (with some field assignments and with some compulsory tests); subsequent on-the-job training lasts two or three weeks, and is concluded with an evaluation conference. The training course is offered every two months.
d) Training process: An OJT coordinator matches each trainee with an experienced colleague who carries out the on-the-job training. When a trainee checks in a passenger, the trainer informs the passenger of the training situation. The training consists of demonstration, explanation and guided practice. Gradually the trainee gathers experience with the different tasks of a ground attendant.
e) Training materials: In the off-the-job course a textbook and a book with assignments are used. In the OJT the current manuals (check-in guide, intercom-guide and company-books) are used, supplemented with a checklist of tasks to be mastered.
f) Interaction with production: The trainees follow the duty-rota of their on-the-job trainers.
g) Trainee characteristics: Most trainees have a relatively high general education. However, a higher form of education does not necessarily imply better skills as a ground attendant. A somewhat modest attitude is appreciated in the beginning.
h) Trainer characteristics: The trainers are experienced employees who have received a two days train-the-trainer course emphasizing familiar job instruction steps. They train three trainees per year on average, and receive a small bonus for this work.
i) Social support: The department management and the supervisors have learned to appreciate the training in its current form. The OJT coordinator takes a great deal of coordinating work off their shoulders. Colleagues are somewhat reserved when 'a tin of new attendants has been ripped open'.
j) Effectiveness of the program: In the experience of those concerned, the program is cost-effective, both in comparison with unstructured OJT and in comparison with a longer off-the-job course. It guarantees

sufficient basic knowledge and skills, it does not take more time than needed, and interference with ongoing work is minimal.

AMEV:

a) Job characteristics: This case study focuses on the client administrators of an insurance company. The company has 3,400 employees of whom 2,450 are office workers. The Debt Collection section numbers around 80 employees, whose task is to administrate and manage debt collection from clients reluctant to pay their premiums.

b) Program history: Until 1985 three departments were each responsible for one part of the debt collection. In 1985 the three departments were fused, resulting in task enrichment for the employees. In order to obtain the missing competencies employees were trained by colleagues who had completed a one day train-the-trainer course. The initiative for this form of training came from line management. The training program was kept in use afterwards, for the purpose of training new personnel. New employees also receive two off-the-job communication modules: written communication and telephone interviews with problematic customers. These modules are developed by the T&D department, based upon a needs assessment.

c) Training schedule: Each new employee has to go through at least six modules, four of which are delivered on-the-job. The first of these modules provides basic knowledge of central administration, the others deal with aspects of debt collection. After two months (on average) the trainee is able to carry out basic debt collecting tasks: answering the telephone, and dealing with 80 percent of the incoming mail. It takes at least a year to master the other, more complex, 20 percent.

d) Training process: Newly hired employees are matched with experienced client administrators working in the same team. In the first month standard work (which is the content of the first module) is done by coach and trainee together. The coach explains the procedures, with reference to the written work-instructions. After some time the trainee is allowed to do the work on his own, initially under frequent supervision from the coach. With incoming or outgoing telephone messages, the coach initially does the talking, while the trainee listens through a monitor. Later, the roles are reversed. When a module is finished, the level of competency reached per task is administrated in the training guide.

e) Training materials: A training-guide listing most of the current tasks is used (in order to register progress), as well as books with written work-instructions. The latter are updated regularly by the team according to a fixed procedure.

f) Interaction with production: Training is applied during the actual work process, which can be carried out in any tempo. In the first months of training the work load of the coach is reduced and the trainee is increasingly allowed to take on more tasks (of increasing complexity) on his own.

g) Trainee characteristics: Although the educational background of experienced employees is very divergent, trainees have a medium to high level of general or economical/administrative education. More educated trainees tend to operate independently earlier and tend to be promoted to higher positions relatively fast. When asked about 'problematic' trainee behavior, trainers mention abstention from asking when something is not understood and acting defensive upon criticism.

h) Trainer characteristics: The group supervisor appoints the coach for a new trainee. Coaches are not trained for their task and do not feel the need to be coached either. The training guide and the work instructions offer them sufficient support.

i) Social support: The Client Administration manager is actively interested in the OJT for new client administrators. The group supervisor feels responsible for the right matching of coach and trainee. Because the client administrators work together in one room, there is a good deal of social control, which motivates the trainee and the coach to do a good job.

j) Effectiveness of the program: The participants are positive about the program. They consider it a 'natural' element of their working conditions. In their view off-the-job training would be less effective.

KNMI:

a) Job characteristics: The KNMI (Royal Dutch Meteorological Institute) employs 550 persons, 415 of whom work in the central office. The case study is focused on the position of 'observer' at Schiphol Airport and Vlissingen Coast guard station. Their tasks involve weather observation and weather reports.

b) Program history: In 1991 the training of weather observers was changed. Before that date newly hired observers received a general two months theoretical course, followed by unstructured on-the-job training. The length of the training period depended very much upon the energy supervisors and trainees were willing to

put into it. The Aviation Meteorological Service manager in Schiphol took the initiative to tailor and structure the training of weather observers. A project team of line managers and a training officer worked out the new program, which comprised a modular course at the central office (with a content adapted to the needs of the peripheral stations) and a follow-on more structured on-the-job training period.

c) Training schedules: The general course in the central office takes three months. The on-the-job training lasts five months for the airport weather observer and six weeks for the coast weather observer. There are come-back days in the central office once every three weeks, sometimes requiring study-tasks, such as weather map analysis.

d) Training process: The trainee does a rapidly increasing portion of the regular tasks, initially closely controlled by the coach. At first observations are noted down in a logbook copy, which can be noted in the logbook itself after correction. Sometimes extra tasks of a simulative nature are given, e.g: 'imagine an impending blizzard; whom would you inform and what code would you use?'. The tasks performed and the independence manifested are marked in a workbook with pages for each training day. Every six weeks (for the airport weather observer) progress is discussed by means of an evaluation form.

e) Training materials: The workbook and the evaluation forms are the main training instruments, apart from the regular instruments and documentation at the weather station.

f) Interaction with production: The training program starts twice a year. Most tasks during on-the-job training are part of the normal work process, which is appreciated. Some study tasks are taken less seriously because they lack direct relevance to the work in the station.

g) Trainee characteristics: The preliminary education required is higher than it used to be, partly because the work is more demanding and partly to allow for further career steps.

h) Trainer characteristics: The on-the-job training is carried out by experienced colleagues, without benefit of any previous instructor training. The quality of the coaching varies considerably. Recently, some coaching of the trainers/coaches has been introduced.

i) Social support: Although the on-the-job coaches are generally motivated for their training task, they would welcome more appreciation from their superiors.

j) Effectiveness of the program: The increase in the amount of structure in the training is evaluated positively. The actualization of the content of the central course has improved safety and reduced the number of failures and disturbances. In addition, the number of internal complaints has diminished.

NS (Dutch Railways):

a) Job characteristics: NS (Dutch Railways) has 27,000 employees, working in different divisions. One such division is Service & Sales. One of the main positions in Service & Sales is that of ticket-clerk, that is, somebody who sells tickets to and advises passengers from behind a counter.

b) Program history: Before 1978 ticket clerks received an off-the-job training. New hires had to wait until they could be placed in the program, and meanwhile received unstructured on-the-job training. As a result the off-the-job course often came too late to be of much relevance. In order to supply a more flexible training course the central training department opted for a private study program, located mainly on the work-site. Recently the private study material has been revised as a result of new hardware and software for use at counters and as a result of the need for more user-friendly training-materials.

c) Training schedules: It takes six weeks to train a ticket-clerk. In the first four weeks an private study package is worked through. This provides information (on procedures, geography, etc.) and assignments that are to be carried out; these are often quite practical, e.g. determining what ticket should be provided given a certain route preferred by the passenger. The assignments are made with the use of the equipment and information available in the workplace. During this period the trainee is coached by an experienced employee. Once a week plenary meetings are organized in a regional center. After four weeks a central examination is administered. During this period, and for two weeks subsequently, the trainee gains experience at the counter, under the supervision of an experienced ticket-clerk. After six weeks the trainee's practical proficiency is assessed.

d) Training process: The trainee independently works through the private study package, but can ask the coach for help. At first during quiet hours, and later more frequently, the trainee gains experience at the counter, literally with the backing of an on-the-job coach.

e) Training materials: The main training materials consist of a private study package, in addition to the equipment and documentation used in the workplace.

f) Interaction with production: In some districts every month and in others every two months a new (central) training period starts. The dates of staff appointments are adapted to this interval. The trainee is gradually introduced to the work. During the training period the trainee and the coach are on the same time schedule.
g) Trainee characteristics: New hires have a medium to rather high level of general education.
h) Trainer characteristics: Coaches are selected by the Service & Sales supervisors. They are usually enthusiastic ticket-clerks.
i) Social support: Support from the Service & Sales supervisors is sometimes lacking, but colleagues usually react positively to new hires. Social support is also obtained at the plenary weekly meetings, where the trainee is tested and exchanges experiences with new hires at other stations.
j) Effectiveness of the program: Comparisons with former or parallel programs can not be made, but participants are generally satisfied with the training provided. An early introduction into the social and material work context is appreciated, as is the frequent testing, which promotes a serious attitude towards the training.

Peek & Cloppenburg (P&C):

a) Job characteristics: In this case-study the training for the positions of shop assistant, senior salesman, and department supervisor in a large clothing retail company is investigated. Peek & Cloppenburg employs 1,800 people, including 40 store-managers, 100 department supervisors, over 300 full-time salesmen (and -women), over 400 part-time shop assistants and nearly 400 one-day assistants.
b) Program history: In 1983 a top-down innovation (new products and new presentation methods) failed. A need for higher personnel commitment was observed by the training manager, the personnel manager and the sales manager, who cooperate as a team. They started organizational development projects to promote motivation and proficiency. These projects resulted in off-the-job training courses with a reflective and activating character. Trainees and their on-the-job coaches (usually their direct supervisors) were stimulated to plan improvement projects to be executed at the work site.
c) Training schedule: New hires start without specific training, and are coached in the same way as one-day-shop assistants. After some months of work experience they attend the course. Department supervisors select employees who are supposed to be ready to follow the course for senior salesman, and higher management selects those eligible for a course designed for future department supervisors.
d) Training process: The themes dealt with in the training for shop assistant are sales technique, as well as dealing with thefts or complaints. Trainees are stimulated to contribute their own experiences and concerns. On Monday mornings, when the shop is closed, trainees discuss the content of the training with their boss and how to apply what they have learned, for example, by taking the initiative for a presentation of a new collection. Also, in the courses for higher positions the practice of taking innovating initiatives on the shop floor is strongly stimulated.
e) Training materials: The main training material consists of the manuals and course-books used in the courses. These are based on the experiences in the shops, and are regularly updated. They are used as reference works.
f) Interaction with production: Because the formal part of the training is off-the-job, it is sometimes hard to keep staffing levels in the real workplace adequate. The training on-the-job consists of efforts to improve the individual's functioning and to try out new activities in the actual work context. It is difficult to distinguish it from 'normal' quality improvement efforts. Experiences gained in the efforts are discussed again in the off-the-job course.
g) Trainee characteristics: Most trainees have finished a medium level vocational education. Full-time employees should have the potential to develop into store-managers.
h) Trainer characteristics: Anyone in a supervisory position can be a trainer. Learning to coach is part of the content of the training received. Potential store-managers are matched with existing store-managers who have a good reputation. Coaching a potential store-manager is considered an honor.
i) Social support: Supervisors know that they are judged by the degree to which they motivate their supervisees for continuous development. They realize motivating for learning is the main task of a supervisor.
j) Effectiveness of the program: The apathy and resistance to change, which were the reasons for starting the training courses, have changed into enthusiasm and a good deal of initiative. Participants evaluate the training programs very positively.

RABO:

a) Job characteristics: The RABO bank organization includes 3,000 offices with 34,000 employees. In the Netherlands there are 700 cooperating local branches. Most local branches work together with regard to training & development. The case-study is focused on the (annual) training of twelve all-round client advisors private banking.

b) Program history: The program started in 1991. The development of the program arose from dissatisfaction with the usual recruitment and training of this category of personnel. Vacancies stayed open for quite a long time while recruitment was in progress. Unstructured on-the-job training took even longer and did not prevent the new hires from making many costly mistakes. For this reason the cooperating local branches decided to train a group of candidates 'in supply'.

c) Training schedules: The training program lasts one year and comprises off-the job and on-the-job components. The off-the-job component includes several short courses in a central location, plus some private study materials. The on-the-job component consists of assignments, plus general front-office experience.

d) Training process: The assignments are linked to the theory discussed in the off-the-job meetings, for example having a number of loan-advice talks or recommending youth savings accounts in interviews with parents of new-born children. Experiences should be reported in writing, and discussed with an on-the-job coach. In a number of instances the job situation did not allow for assignments to be executed.

e) Training materials: Apart from the course materials and the normal documentation at the work-site there are no special training materials.

f) Interaction with production: Trainees are appointed to supernumerary positions, but are required to work at the counters when they are in the office. The kind of work they do depends partly on the kind of experience they are supposed to gain in relation to the off-the-job course. In order to obtain a sufficient variety of experiences the trainees change office after a six months' period. For some it is hard to find a balance between their study activities and their daily work.

g) Trainee characteristics: Trainees have had a medium level vocational education or a relatively high level general education. Some trainees had difficultly in coping with criticism, but changed after confrontations involving criticisms of their work and after getting a second chance in the second six months' period.

h) Trainer characteristics: Trainers received no special training for their coaching task, nor a trainer's manual. Their position was not necessarily in client advising on private banking and they could not always see the trainee work. They fulfilled a mentor role.

i) Social support: Some colleagues view trainees as a threat since the latter can reach relatively high positions in a short time. Consequently they are not always prepared to share their (often specialized) knowledge with the trainee.

j) Effectiveness of the program: Compared with the traditional two year apprenticeship program the training is reduced to half the time, and the quality of the work is higher due to the more competence-directed training program. Objective measures of quality are the number of banking products sold and the number of clients signalled to colleagues who are product specialists.

Victoria Vesta (VV):

a) Job characteristics: Victoria Vesta is an insurance company, which employs some 1,400 employees, of whom 550 work as insurance advisers in the field.

b) Program history: The program was developed by the Training & Development department around 1985, when a need for new insurance advisers arose. It was made more case-oriented in 1988, in consultation with Sales Management.

c) Training schedule: The program is a three months resident off-the-job training with occasional field experience (6 days in total). The actual on-the-job training part is therefore quite limited. In the off-the-job training role-play and video-feedback are important techniques. During the first six weeks after the training the trainee is coached intensively by the regional sales supervisor. Together they visit potential clients and develop the administration.

d) Training process: Field experiences consist in visits to clients together with an experienced insurance advisor. The trainee usually has a merely observant role. After training the new insurance advisor starts working on his own, but still under close supervision.

e) Training materials: There are no special on-the-job training materials. There is a need felt to develop observation and interview instruments to create more structured field experiences.

f) Interaction with production: Training hardly interferes with production. However, some experienced insurance advisers do not like coaching new advisers; they are convinced that their clients prefer talking with them alone. Others, however, have a positive attitude towards coaching trainee staff.
g) Trainee characteristics: Trainee educational backgrounds vary considerately: from rather low to rather high general education. Coaches prefer trainees who do not mind getting home late and who are not pedantic.
h) Trainer characteristics: The sales supervisor selects the on-the-job coaches, insurance advisors who like to pass on knowledge to others.
i) Social support: Insurance advisers possess a good deal of independence in their jobs: they have their own clients and earn their own commission. For social support they are mainly dependent on their sales supervisors.
j) Effectiveness of the program: Although off-the-job training is considered absolutely necessary, on-the-job experience in the first three months is considered too minimal and not sufficiently connected to the themes discussed in the course. As a consequence learning remains rather abstract. The problem is that coaching a new colleague does not pay off. Role play (partly with actors) and discussing cases in the off-the-job course are reasonable substitutes.

Based on the eight case-descriptions answers can be formulated to the research questions on personnel involvement (1-5) and didactics (6-9). In addition the concordance of the data with the expectations is inspected.

Personnel

Influence of trainee previous education (1)
New hires tend to have a higher educational background than the Old Guard. This can be explained by the general raising of the educational level of the Dutch population, by labor market supply, and by the policy of several companies toward task enrichment and career planning.

Higher-educated trainees tend to pick up theoretical information faster and tend to be more interested in the 'why'. Expectation 1 is therefore somewhat supported by the data. Higher-educated trainees are not necessarily better in the communicative and operational aspects of the job. With monotonous work and limited career chances they may get bored by the work and drop out.

Influence of learning habits (2)
The ideal trainee in the eyes of the on-the-job trainers is somewhat modest, interested, not defensive, while showing a moderate level of initiative. These characteristics simplify the trainer's job. A bad learning habit is failing to report non-understanding: it causes delay and irritation. Usually the training is reported to be successful even if the trainee shows bad learning habits. In those cases some extra training and confrontations are needed to obtain the desired results. In some cases appointing another trainer allows the trainee to make a fresh start.

Expectation 2 gets some support from the data, but a more systematic study, relating training results to trainee characteristics is needed.

Trainer characteristics (3)
Trainers are usually enthusiastic employees, who have mastered their jobs thoroughly and like to coach others. The availability of employees with the required characteristics depends on the department culture. Trainers should be in a position to closely monitor the trainee. Training should not interfere with the trainer's own work task and should be rewarded by a bonus, by social recognition and/or by relieving the trainer's work load. Trainees differ considerably in training style (e.g. in the amount of explanation and directivity required). Some matching and/or adaptation with regard to communication-, work- and learning/training-style is desirable. One of the most difficult parts of the trainer's task is criticizing the trainee. The trainer's proficiency can be enhanced by management training programs or train-the-trainer programs. Dependence on training competence can be reduced by providing training manuals and trainee private study guides.

With reference to expectation 3 we may conclude that careful recruitment is just one of the prerequisites for getting the right trainers. Careful matching and supplying of social and material support is just as important. The position of on-the-job trainer is often not sufficiently rewarded as a formal career step.

Manager influence (4)
Supervisors can do a great deal to enhance the quality of on-the-job training. Whether they do so in practice depends on their attitude towards training, which is, in turn, influenced by their own management training and by the importance their own superiors attach to training. In addition, the supervisor's attitude towards training will be influenced by the relevance of the training content and training materials.

One supervisor's task involves matching trainees and on-the-job trainers and acting as referee in cases of tension. In some cases a special coordinator is appointed for this task. Another task is motivating on-the-job trainers. In some cases this task is neglected, which is regretted by the trainers. A third task is reserving time for training. Especially in times of innovation and in times of staff shortages it is tempting to give short-term production goals priority over long-term qualification goals. A solution is sometimes found in attracting temporary replacement personnel. A fourth task is periodic evaluation of the training and taking the initiative in updating and improving the training. It is important for these tasks to be explicitly mentioned in the supervisor's job description.

In relation to expectation 4 we may conclude that a serious attitude of local supervisors towards structured on-the-job training is certainly important, but that the most important condition was not mentioned in expectation 4b, namely, that local supervisors should be convinced that their own superiors set great store by personnel training, and that they will be assessed accordingly.

Colleague influence (5)
The influence of colleagues can be important. If colleagues feel threatened by the new hire their influence can be negative. Supervisors should be wary of creating

training conditions that are detrimental to the settled employees' situation. In some cases a very positive learning climate was encountered, due to deliberate management policy. Exchanges of experience with other novices (off-the-job exchange meetings) are evaluated very positively.

Expectation 5 can not be assessed in relation to the data, since in all cases adult learning is considered to be normal.

Methods of training

Types of training (6)

In almost all cases a distinction can be made between preparatory learning activities and learning in real work contexts. Preparatory learning activities can take place both off and on the work site. They include off the job training courses, reading written instructions and practice in simulated work situations. With regard to learning in real work contexts a distinction was made earlier in this report between on-site instruction and on-site study. Both depend on task analysis, but in the case of on-site instruction a trainer demonstrates, explains, and gradually hands over tasks, while in the case of on-site study it is the trainee himself who actively explores and tries out the tasks that are to be carried out. In the cases described, the AERO, AMEV and KNMI, on-the-job training has the features of on-site instruction, whereas the P&C and RABO on-the-job training is more of an on-site study type. In the ABN-AMRO case a real work training component is missing: after a well-developed preparatory program using an 'isolated branch' of the front-office data processing system, trainees simply had to start using the system in their client contacts. As described however, they felt the need to have some additional field experience, guided by experienced colleagues. In the VV case the on-the-job training is rather marginal and (when it comes to coaching by the sales supervisor) more of an (unstructured!) 'on-site practice' type (DeJong 1991, p.308), which involves learning from the work itself. In the NS case as well the real work training component is of an (unstructured) 'on-site practice type': trainees do the job that is to be done and are backed by the on-the-job coach.

In summary, structuring on-the-job training in real work contexts is executed in two steps: 1) dividing the job into separate tasks which should be trained in a certain sequence, and 2) either having an on-the-job trainer break in the trainee in each of these tasks (by modelling, explaning, giving opportunities for practice and providing feedback) or having the trainee search for occasions to gain experience with the tasks after a thorough orientation period). In some cases the work can easily be broken up into tasks that can be separately practised in real work contexts, which allows for on-site instruction (AERO, AMEV, KNMI) or on-site study (P&C, RABO). In other cases (ABN-AMRO, VV, NS) employees should be able to perform all tasks at any moment, depending on the unpredictable needs of the individual client. In the latter cases the practice shock can be somewhat reduced by practice in simulated contexts, observation of experienced workers and back-up by experienced colleagues or supervisors. The choice between on-site instruction and

on-site study depends on the amount of task standardization and the appreciation of initiative and independence. The AERO, AMEV and KNMI jobs depend on standardized procedures, whereas in the P&C and RABO jobs initiative and independence is more strongly valued. Of course these differences are far from absolute; in fact self-directed learning and trainer-directed learning are two extremes of a continuum.

The expectation that on-site study is most effective for jobs with a substantial problem-solving activity component, whereas on-site instruction will be most effective for jobs that mainly involve the following of rules gets some support from the data. However, the data tell us much more about types of on-the-job training. First, on-the-job training need not always take place in real-work contexts. Several cases show examples of on-the-job practice in dummy work environments (ABN-AMRO, NS), paper-and-pencil exercises, using manuals and other materials available on the job (ABN-AMRO, NS) and written instructions, to be studied before practising on the job (AMEV). This on-the-job private study is meaningful if a) the trainee learns to use systems localized in the work place, b) feedback can be given by the persons doing the real work coaching, c) the time lapse between study and practice is short. Secondly, it is not always possible to learn a job by means of one task at a time. In certain jobs it is necessary to be able to perform all tasks at any moment. In those cases the real work component of training cannot have the form of on-site instruction or on-site study; it can only be on-site practice, supported by previous preparatory learning experiences, expert observation, and expert back-up.

Types of assignment (7)

Several types of assignment can be distinguished in the cases studied. The first type may be called application assignments. They are intended to apply what has been learned in an off-the-job course. Although these assignments can increase the impact of the off-the-job course, their scheduling in the on-the-job work process can be problematic. This may lead to assignments which are considered redundant from the job perspective (KNMI), or are too open from the course perspective (field experience at VV), or cannot be performed in the job situation (RABO). An interesting solution is provided by P&C, where the trainee and the on-the-job trainer discuss feasible job learning experiences in relation to the off-the-job training themes. The second type of assignment can be called private study assignment. It involves written instructions and learning tasks (ABN-AMRO, AMEV, NS) and/or tasks to be performed in a simulated work environment (ABN-AMRO, NS). The development of these kind of private study tasks demands an accurate task analysis and expertise in instructional materials development. A lot can go wrong in private study. The third kind of assignment is acquiring supervised on-the-job work experience. This kind of assignment has been discussed in the previous paragraph. It is usually evaluated very positively.

Expectation 7 cannot really be confirmed by the data: almost all assignments meet the criteria stated. Assignments which are less positively evaluated fall short

of other criteria: they are not related to *current* work tasks (KNMI), but rely on less user-friendly materials (NS) or do not take the local job situation into account (RABO).

Training materials (8)
In several cases the training materials are identical with the documentation used on the job. The training of novices is a strong impetus for regular updating or even development of this documentation (e.g. AMEV). This documentation is used by both trainees and on-the-job trainers. Some cases show examples of dummy data-processing systems for the purpose of practising. Other training materials are exercise-books, checklists with tasks and evaluation forms. Also, in some cases guides for on-the-job trainers were provided. The expectations are supported by the data: important features of manuals are their up-to-dateness and their ease of reference. Practice with (copies of) materials available on the work-site is experienced as meaningful. The expectations make no mention either of exercise-books for preparatory learning or checklists with tasks belonging to the job. In fact both are current and helpful.

Timing of on-the-job and off-the-job training (9)
Several cases show the same developmental pattern. In the first stage new employees just receive unstructured on-the-job training. In the second stage an off-the-job course is provided, offering the knowledge and skills which are supposed to be needed for a good start, followed by a period of unstructured on-the-job training. In the third stage the off-the-job course is tailored and made more practice-oriented, with simulations and field experiences. The on-the-job part which follows has a more structured character and is sometimes supplemented by off the job reflective meetings. This developmental pattern (or part of it) can be discerned at AERO, KNMI, NS, P&C and VV.

Whereas in four cases an off-the-job or private study period is followed by an on-the-job period (ABN-AMRO, AERO, KNMI, VV), in three cases a more frequent alternation of off-the-job (or private study) and on-the-job activities is present (AMEV, P&C, RABO). The NS program combines both options.

Whenever an on-the-job training program is combined with an off-the-job program, the problem arises that the date of starting a new training course determines the date on which new employees can be hired. This has been solved by training in stock (RABO), making multi-functional modules (KNMI), starting two-monthly appointments or adapting appointments (NS). For some companies the problem has been the motivation to localize preparatory instruction in the work place (AMEV).

With regard to the relation between the work process and the on-the-job training process several options can be detected. In some cases (AERO, KNMI, NS) the trainee and the on-the-job trainer receive the same work schedule. The on-the-job trainer transfers increasing parts of his job to the trainee. In other cases on-the-job training slows down the work so much that the work load of the trainer has to

be adapted in the first few weeks (AMEV). Or, in other cases the novice is coached by his supervisor (P&C and VV), who lends support when needed. In the RABO case the trainee takes several positions, depending on both the assignments in the training program and the needs of the office. In one case the on-the-job training is detached from the work process (ABN-AMRO).

The timing of on-the-job and related off-the-job training appears to be an important issue (in accordance with expectation 9). On-the-job training in real work situations should not be hampered by a lack of prerequisite knowledge and skills. Off the job training without sufficient field orientation is just as ineffective. Alternation of on-the-job training and off-the-job training appears to be an ideal solution, but is not always feasible.

Involving the social and material work environment in learning a job can be beneficial for both the novice and the team. It pushes the team towards reflection on its procedures, it helps the novice to get integrated in the team, and it is often the most motivating and effective way of training. There are two dangers however: one danger is that the work process is hindered by the training activities, the other is that training is hindered by work priorities. In the cases studied the first of these is counteracted by several measures. In expectation 9b the following were already mentioned: using 'lee hours' for training (NS), the gradual introduction of trainees into productive tasks of increasing complexity (AMEV), delivering instruction by written or electronic media (ABN-AMRO, NS, ABN-AMRO), and reducing learning time by using good instructional materials (ABN-AMRO, NS, AMEV). Other measures include appointing an OJT coordinator (AERO), matching the work schedules of trainees and on-the-job trainers (ABN-AMRO, NS, AERO), providing off-the-job training to introduce preliminary knowledge and skills (KNMI, AERO, NS. P&C), or trainee-trainer consultation on on-the-job learning activities (P&C). The second danger (priority of work process) is counteracted, in accordance with the expectation formulated in 9c, by allowing trainers time for training (AMEV), by means of time schedules for OJT and assessment of progress (AERO, AMEV, KNMI, NS), common duty schedules (ABN-AMRO, NS, AERO), and by appointing and training trainers who take their training job seriously (several cases). In addition of course declaring novices exempt from production norms in the first weeks helps to reduce production pressure (in most cases). In some cases even replacement teams have been formed to temporarily support locations with a high number of trainees (ABN-AMRO).

Conclusions

The main research objective was to increase insight into (forms of) structured on-the-job training as realized in practice. The case studies taught us that many measures can be taken in order to structure on-the-job training (plus connected off-the-job training components). Common sense tells us that the need for structuring on-the-job training is greater if a) a greater number of employees has to be trained for similar jobs (which guarantees recovery of developmental costs), b) initial

training levels are low (linked to the presupposition that higher-educated trainees have a greater facility for 'do-it-yourself training'), c) the difference between initial competence levels and the required levels for adequate job performance is great (making training a harder job), and d) the damage caused by bad job performance is greater (making training more important).

The model presented below distinguishes five categories of structuring measures found in the cases examined: 1) tailoring, 2) timing, 3) safeguarding training, 4) supporting and 5) guiding.

Tailoring:

- performing a task analysis in order to find out what tasks constitute the job and which knowledge and skills are minimally required per task.
- frequent evaluations and updating of training content.
- providing procedures to test prerequisite knowledge and skills and to determine the adequacy of task performance.
- emphasizing the need for 'local verification' of knowledge and procedures learned in off-the-job training.

Timing:

- providing a 'job curriculum': starting with the most basic tasks, and gradually extending the amount of tasks one is allowed to perform independently.
- providing a curriculum for knowledge and skill acquisition adapted to the 'job curriculum'.
- preventing waiting periods by either providing prerequisite off-the-job training with sufficient frequency (e.g. once every two months) or by using individualized study packages.
- providing focused field orientation alongside off-the-job training.

Safeguarding training:

- appointing an OJT coordinator, responsible for OJT quality and matching trainees with on-the-job trainers.
- allowing novices a non-productive training period.
- determining maximum periods for achieving training goals.
- appointing an on-the-job trainer (coach) for each trainee.
- common work schedules for trainees and on-the-job trainers.
- temporary relief of production norms for on-the-job trainer.
- public appreciation of training efforts.
- emphasis on importance of employee training in management courses.

Support:

- providing study materials, exercises and simulated contexts for individualized study and practice.
- providing guides for on-the-job trainers.
- providing well-structured manuals and job aids.

- providing evaluation forms and checklists listing tasks to be mastered.
- serious selection of on-the-job trainers: trainers should be experienced employees who are in a position to work closely with the trainee and who are motivated to coach new hires.
- training or briefing of on-the-job trainers; discussing both training content and training procedures.

Guidance:

- getting trainees in touch with on-the-job trainers from the moment of appointment (even if on-the-job training is preceded by a period of off-the-job training; e.g in field experiences).
- making on-the-job trainers (and their trainees) realize their main task is not instruction, but providing opportunities for practice and for gaining experience in a relatively safe way: on-the-job trainers should help trainees to find or create those occasions, prepare the trainee, reduce complexity, provide help or take over when needed, and reduce risks of failure.
- making on-the-job trainers (and their trainees) realize that providing performance feedback to the trainee is of paramount importance.
- monitoring the training process by department supervisors and encouraging initiatives in both trainees and on-the-job trainers to search or create relevant learning situations and opportunities to receive feedback.
- reflective meetings of new hires working in different locations.

Discussion

In this research several methodological knots had to be cut. The sample of cases is not a representative one. Cases were chosen because they were known to incorporate some kind of structured on-the-job training, and because they were located within a reasonable geographical distance and were willing to participate. At this stage of the research this was thought to be acceptable: the aim was not to describe 'average practice' but to devise theoretical concepts which would illuminate relations between the conditions, processes and effects of structured on-the-job training. In other words, the aim was not to describe what 'is', but what 'could be'. New cases could be added which might show new possibilities and deepen insights.

A dilemma that had to be solved was the choice between an inductive and a deductive research approach. An inductive research approach would use open questions and would not start with a conceptual framework derived from the literature, whereas in a more deductive approach the first step would be to build a conceptual framework, based on the available literature, which would be empirically 'tested' in the case-studies by the use of structured interview schedules. The deductive approach was chosen, but the interviewers were asked to be alert to 'unexpected data' which might be relevant to answering the research questions. This solution had the advantage that the same categories of data were gathered in all cases, but it made (sometimes too) great demands on the interviewer. In future case

studies interviews should include more open questions, in which interviewees are asked to co-operate as investigators of their own experiences.

Finally, a problem encountered by the researchers was how to assess cause-and-effect relationships without the use of an experimental design. The solution to this problem was to make use of the experience gathered by the participating organizations in the process of developing, evaluating and adapting their training programs, and to relate the existing variety within and between the cases to the effects experienced by the persons concerned. Of course conclusions can only be tentative, but at this stage of the research this is as much as can be expected.

This case-comparison study may be seen as an attempt to generalize the experiences of companies in trying to optimize their novice employee training. The measures taken differ between the cases, but they are all directed towards finding a way to gradually and safely introduce novices into the real work process. Each category of measures is aimed at solving one of the dilemmas that has to be solved in introducing a novice:

1. tailoring measures attempt to solve the dilemma of standardization of work processes versus adaptation to new or local circumstances;
2. timing measures attempt to combine the advantages of systematic transfer of skills and knowledge with the motivating and illuminating power of immediate experience;
3. measures to safeguard education attempt to protect training activities from the exigencies of production;
4. support measures are intended to relate individual learning processes to general training goals;
5. guidance measures should create learning situations in which the trainee can experiment without risking disastrous failure.

The idea of on-the-job training as an activity relating two separate systems, the system of work and the system of education, was proposed by Scribner and Sachs in 1990. In combining the two systems several creative solutions to apparent clashes of interests have to be found. Studying successful on-the-job training programs can help identify the dilemmas that must be solved and provide a variety of possible solutions.

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